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# **RAT Requisition Approval Team - A L6S Initiative**

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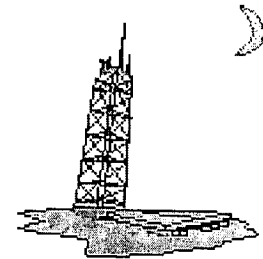
**Presenter: Valerie Hall**

This presentation contains data that has been altered to protect our company interests.

# **USA: Who Are We?**

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- **Prime contractor for NASA's Space Shuttle Program**
- **United Space Alliance is responsible for the day-to-day operation and management of the U.S. Space Shuttle fleet and brings a broad range of expertise to the job, including:**
  - **Mission Design and Planning**
  - **Flight Operations**
  - **Software Development and Integration**
  - **Payload Integration**
  - **Integrated Logistics**
  - **Astronaut and Flight Controller Training**
  - **Vehicle Processing, Launch and Recovery**



# **L6S Project Description**

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- **Problem:**

- The current cycle time for generating and approving Requisitions does not meet “Best-In-Class.”

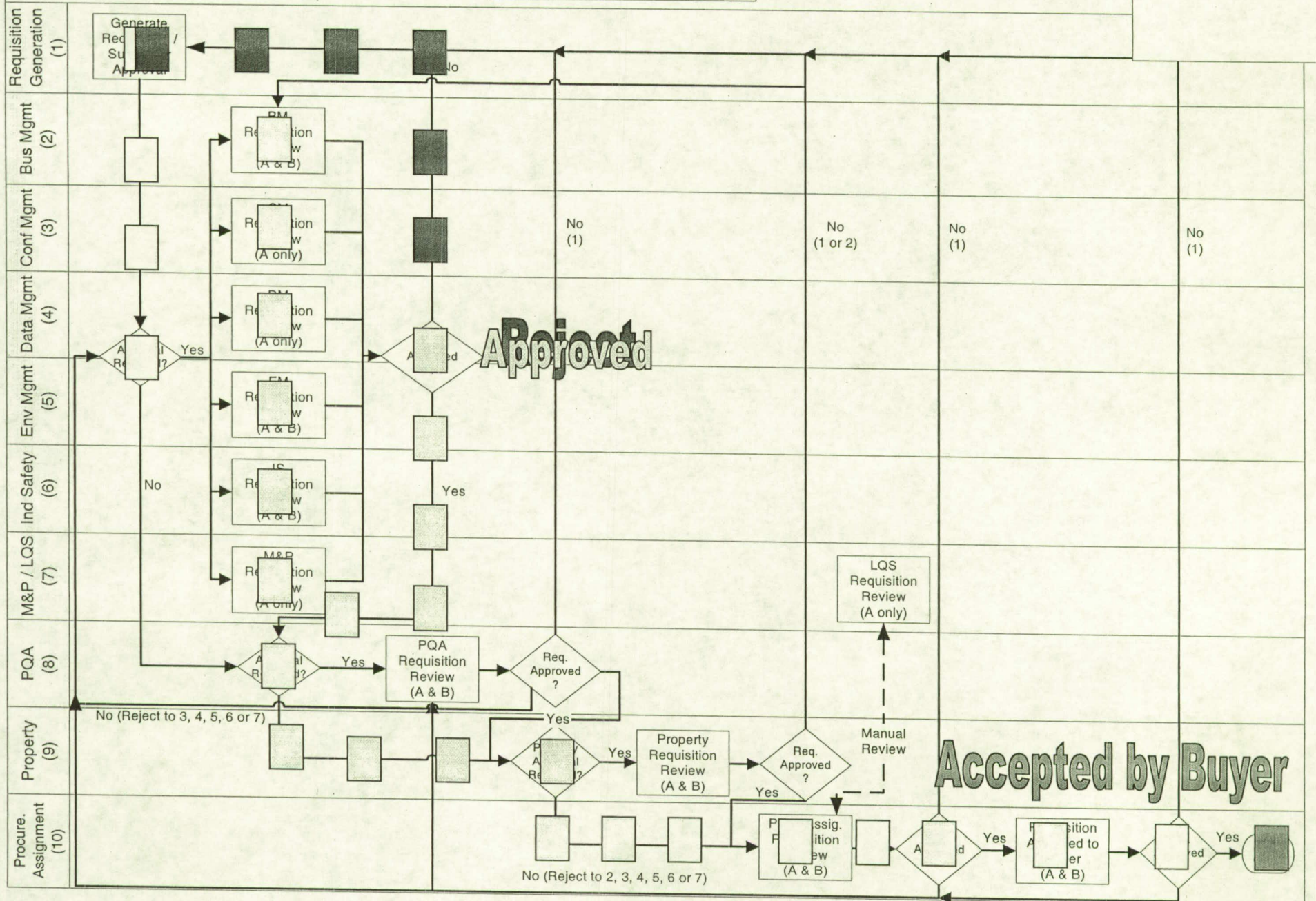
- **Scope:**

- Only looking at the Florida Requisition Approval process for Orbiter (ORBF & ORBG) and Ground (GFAC) stocked items. This includes the time from when a requirement is generated by Logistics Planning and Supportability in Florida until is approved and received by Procurement.
- Requisitions generated at other sites or for non stocked items will be out of scope of this Project.



# Requisition Approval Team - Process Improvement Project

(ORBF, ORBG and GFAC Items)



# **Purpose of L6S Project**

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- **Improve Cycle Time by 50%**  
7.4 Average Cycle Time/Days  
4.9 New Average Cycle Time  
Only 33% decrease
- **First Time Quality = 95%**  
83% FTQ  
86% New FTQ
- **Improve Customer Satisfaction**

**Still Implementing Changes That Will  
Decrease Cycle Time to Goal of 50%  
And Increase FTQ to 95%**

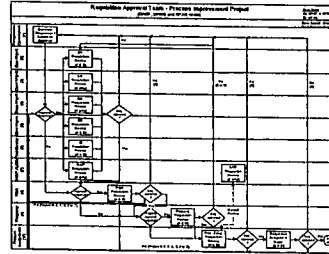
# Data

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- Data came from People Soft - includes the time from when a requirement is generated in People Soft until received by procurement to be assigned to a buyer
- Created a macro that pulls the data into needed format to go into model
  - Model is using real data
    - Over 53,000 line items (actions)
    - Over 16,000 requisitions

# **How it was done:**

- **Visio Flowchart**



- **ProModel Process Simulator**



Process Simulator.Ink

- **ProModel**



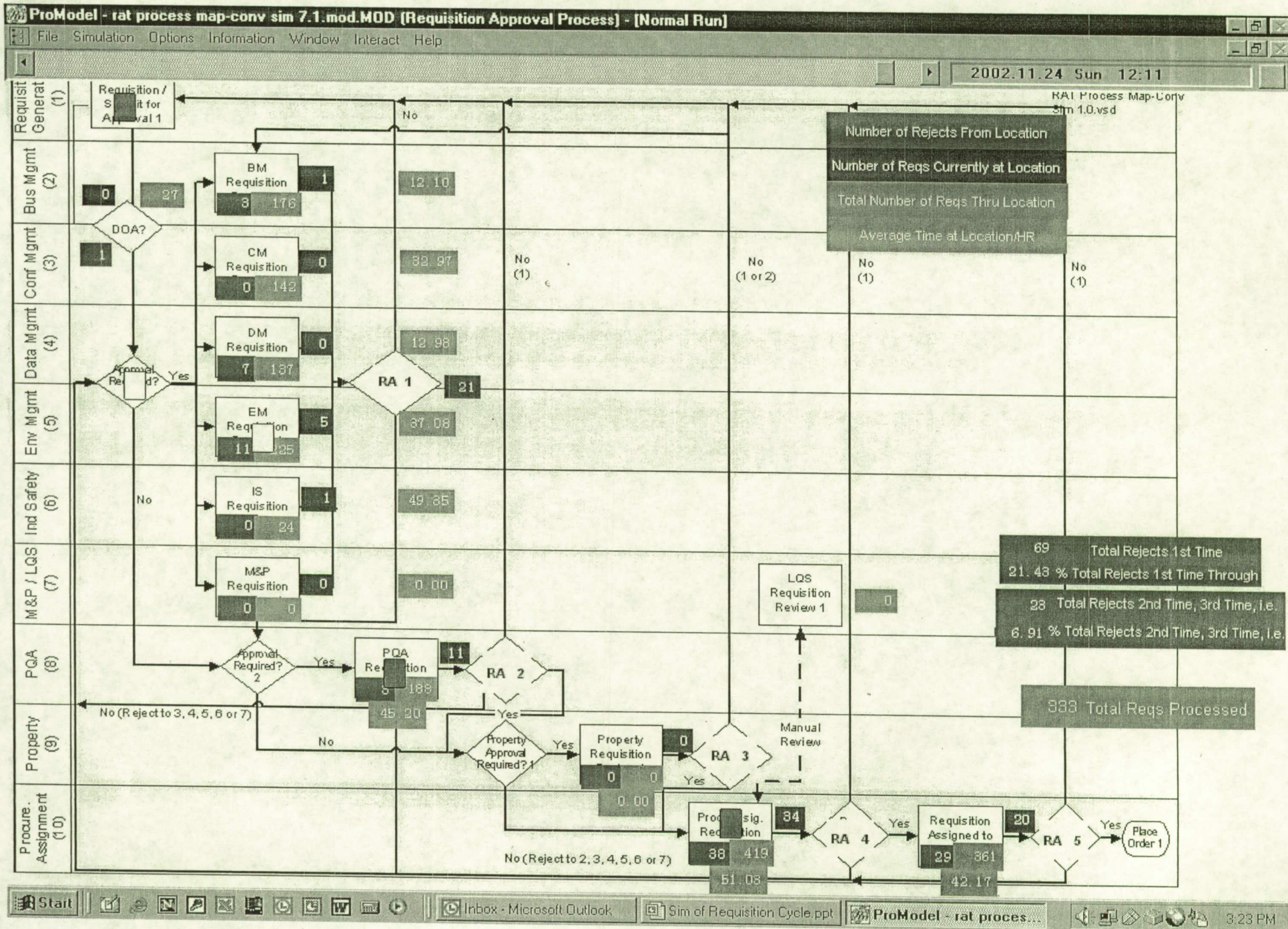
Promodel.Ink

# Sample Data

45309	N_DOA_WL_OBJ	DOA_Approval	0.10549	6/12/2002 13:46
45309	N_BMA_WL_OBJ	BusMgmt_Approval	0.72679	6/12/2002 16:18
45309	N_ESA_WL_OBJ	EnvSafety_Approval	1.66180	6/12/2002 16:18
45309	N_ISA_WL_OBJ	IndSafety_Approval	1.26850	6/12/2002 16:18
45309	N_PASGN_WL_OBJ	Proc_Assignment	2.77200	6/14/2002 15:30
45595	N_DOA_WL_OBJ	DOA_Approval	0.84650	6/24/2002 13:57
45595	N_BMA_WL_OBJ	BusMgmt_Approval	1.13800	6/25/2002 8:47
45595	N_ISA_WL_OBJ	IndSafety_Approval	2.48000	6/25/2002 8:47
45595	N_PQAA_WL_OBJ	PQA_Approval	1.00340	6/27/2002 11:49
45595	N_PASGN_WL_OBJ	Proc_Assignment	2.86427	6/28/2002 11:54
45983	N_PQAA_WL	PQA_Approval	2.07759	7/11/2002 7:54
45983	N_PASGN_WL	Proc_Assignment	0.10339	7/12/2002 8:14
45983	N_PROCA_WL	Proc_Approval	21.17922	7/13/2002 5:14
45983	N_RPLR_WL	RPL/PLN_Reject	2.68520	7/15/2002 17:14
45983	N_PQAA_WL	PQA_Approval	0.03790	7/15/2002 17:35
45983	N_PASGN_WL	Proc_Assignment	0.28650	7/15/2002 18:35
45983	N_PROCA_WL	Proc_Approval	0.62037	7/16/2002 6:35

aRejectTo	Reject To	Go To	Code
=1	BusMgmt_Rej	BM	IF aRejectLoc = 1 Then Route to BM
=2	CfgMgmt_Rej	CM	IF aRejectLoc = 2 Then Route to CM
=3	DataMgmt_Rej	DM	IF aRejectLoc = 3 Then Route to DM
=4	EnvSafety_Rej	ES	IF aRejectLoc = 4 Then Route to ES
=5	MnP_Reject	M&P	IF aRejectLoc =5 Then Route to M&P
=6	MAC_Reject	Generate_Req	IF aRejectLoc = 6 Then Route to Generate_Req
=7	CSL_Reject	Generate_Req	IF aRejectLoc = 7 Then Route to Generate_Req
=8	Online_Rejec	Generate_Req	IF aRejectLoc = 8 Then Route to Generate_Req
=9	RPL_PLN_Rej	Generate_Req	IF aRejectLoc = 9 Then Route to Generate_Req
=10	PQA_Reject	PQA	IF aRejectLoc = 10 Then Route to PQA
aRejectedFr	Reject From		If prevDescr = "BusMgmt_Approval" Then
=1	BusMgmt_Approval		RejectFrom = 1
=2	CfgMgmt_Approval		Elsif prevDescr = "CfgMgmt_Approval" Then
=3	DataMgmt_Approval		RejectFrom = 2
=4	EnvSafety_Approval		Elsif prevDescr = "DataMgmt_Approval" Then
=5	IndSafety_Approval		RejectFrom = 3
=6	MnP_Approval		Elsif prevDescr = "EnvSafety_Approval" Then
=7	PQA_Approval		RejectFrom = 4
=8	DOA_Approval		Elsif prevDescr = "IndSafety_Approval" Then
=9	Proc_Assignment		RejectFrom = 5
=10	Proc_Approval		Elsif prevDescr = "M&P_Approval" Then
=11	Property		RejectFrom = 6
			Elsif prevDescr = "PQA_Approval" Then
			RejectFrom = 7
			Elsif prevDescr = "DOA_Approval" Then
			RejectFrom = 8
			Elsif prevDescr = "Proc_Assignment" Then
			RejectFrom = 9
			Elsif prevDescr = "Proc_Approval" Then
			RejectFrom = 10
			Elsif prevDescr = "Property" Then
			RejectFrom = 11







# Baseline: July 2002 – June 2003

## L6S Requisition Acquisition Team

Requisitions Processed from July 2002 - June 2003

Total Requisitions 7150  
 Rejects 1st Time Thru 1299  
 Percent Rejects 1st Time 18.20%  
 Rejects 2nd Time Thru + 532  
 Percent Rejects 2nd Time + 7.50%

Baseline for Dataset 07-02 to 06-03

Index	Ave/Days	Count	%CSL	%MAC	%ONL	%PLN
GFAC	2.83	5552	0.00	0.05	12.60	84.42
ORBF	22.50	1500	41.33	28.45	4.23	21.70
ORBG	23.95	350	29.87	20.36	4.56	45.22

Average Time for All Reqs 7.44 Days  
 Average Time No Rejects 5.41 Days  
 Average Time W/Rejects 27.63 Days

	Total Reqs Processed at Loc	Aver Time at Loc / HR	# of Times a Req is Rejected Back To Loc	Aver Time at Loc for Rejects / HR	% Reqs Rejected Back To Loc	# of Times a Req is Rejected From Loc	% Reqs Rejected From Loc
Reqs at DOA	768	8.69	0	0.00	0.0%	20	2.56%
Reqs at BM	2740	10.35	10	3.95	0.4%	111	4.05%
Reqs at CM	2011	27.96	5	36.32	0.2%	22	1.08%
Reqs at DM	1699	5.89	8	12.90	0.5%	6	0.35%
Reqs at EM	4987	27.36	0	0.00	0.0%	213	4.25%
Reqs at IS	645	24.19	0	0.00	0.0%	5	0.72%
Reqs at MP	610	51.71	10	12.02	1.6%	47	7.34%
Reqs at PQA	1786	64.55	622	37.95	35.8%	16	0.89%
Reqs at Property	11	14.27	0	0.00	0.0%	1	8.33%
Reqs at Proc Assgn	8544	76.01	0	0.00	0.0%	923	10.70%
Reqs at Proc Approval	475	424.32	0	0.00	0.0%	489	100.61%
			95	36.23	1.31%	Reject To Online	
			159	74.11	2.19%	Reject To MAC	
			225	58.36	3.10%	Reject To CSL	
			702	184.06	9.68%	Reject To RPL/PLN	
			1859		25.63%	Total Reject To	





Scenarios	REQUISITION APPROVAL TEAM
1	What would the impact be if EM had not reviewed Reqs with a category code of NCFGG?
2	What would the impact be if CM had not reviewed Reqs with a category code of POLCF, EXPLO, OEMSR or RAMAT?
3	What would the impact be if M&P was moved from the parallel process to right after PQA (and removed from the Manual Review they perform when the Req is in Procurement Assignments work list)?
3A	A: 1) Moved M&P but times stay the same.
3B	B: 1) Moved M&P and 2) deleted M&P times (we are assuming the time would have been absorbed in the PQA process).
3C	C: 1) Moved M&P, 2) deleted M&P times and 3)moved times associated with "Proc Assignment Rejects to PQA" by assigning Proc Assignment time to M&P and 4) deleting those rejections.
3D	D. 1) Moved M&P, 2) deleted M&P times and 3)moved times associated with "Proc Assignment Rejects to PQA" by assigning Proc Assignment time to M&P and 4) deleting those rejections. and 5) deleted "Buyer Rejects to PQA" for those requisitions only.
3E	E. 3A-3E plus reduce MP Time by 5%, 10%, 15%, 20%, 25% and 50%.
4	Move Property to work concurrently with BM, CM, DM, EM, IS and M&P?
5	What would the impact be if DM had not reviewed Reqs with a category code of CAREP, POLCF, POLCN and SERVM?
6	What would the impact be if PQA had not reviewed Reqs with a category code of DAPRO, NCFGG, OFFSU, PPE, SERVM, and TOOLS? Or ADPHD, ADPSH, ADPSO, ADPSS, AFFIL, CONSU, EMPMO, EXAUT, FORMS, LEASE, MAINT, MATHD, OTHOP, PAMEQ, PERSO, TRAIN?
7	What would be the impact if IS had not reviewed Reqs with a category code of CAREP, CFGHN, ELEC, TOOLS, and TSTEQ? Or CONFB, CONSU, ELECT, HYDRO, LEASE, MAINT, OEMSR, or TRAIN?

Scenarios	REQUISITION APPROVAL TEAM
8A	1) Created new location, LQS, 2) moved times associated with "Proc Assignment Rejects to PQA" by assigning Proc Assignment time to LQS and 3) deleting those rejections. and 4) deleted "Buyer Rejects to PQA" for those requisitions only.
8B	Reduce LQS time by 5%, 10%, 15%, 20%, 25% and 50%.
9	Decrease all rejections back to requisitioner by 25% and then by 33%, ("Rejects to Online", "Rejects to MAC", "Rejects to CSL", "Rejects to RPL/PLN")
10	1)Delete those times associated with LQS, 2) Delete those rejections, 3) Delete "Buyer Rejects" for those requisitions only

## **ProModel Simulation (Results for Scenarios 2,5, 6, 8, 9)**

☐ **Baseline: July 2002 – June 2003: Average  
7.44 Days**

☐ **Individual Projected Improvements**

☐ **Scenario 2: 7.06 Days**

☐ **Scenario 5: 7.09 Days**

☐ **Scenario 6: 6.92 Days**

☐ **Scenario 8: 6.48 Days**

☐ **Scenario 9: 6.62 Days**

☐ **Combined Projected Improvements**

☐ **Scenarios 2, 5, 6, 8 & 9: Average 6.01 Days**

**20% Decrease**



# Data Collection (Baseline vs. Current)

- 24 Months of Data has been collected:

- Overall Cycle Time

- 07/01/02 – 06/30/03

Overall Avg: 7.4

GFAC Items: 2.8

ORBF Items: 22.5

ORBG Items: 23.95

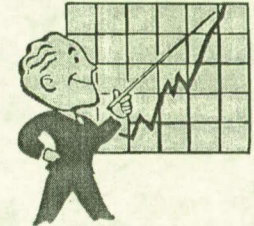
07/01/03 – 06/30/04

Decrease by 33% Overall Avg: 4.9

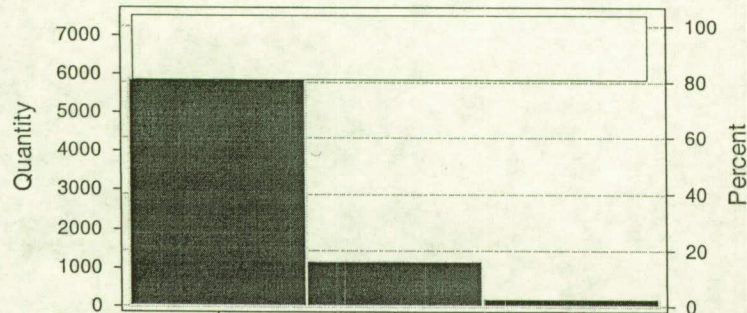
GFAC Items: 2.6

ORBF Items: 11.1

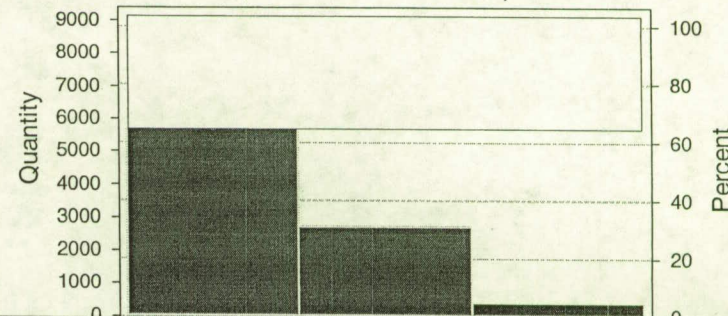
ORBG Items: 10.98



Pareto Chart for Item Types  
(07/01/02 - 06/30/03)



Pareto Chart for Item Types  
(07/01/03 - 06/30/04)



**Projected Savings=6.01 20% ↓ Actual=4.9 33% ↓**

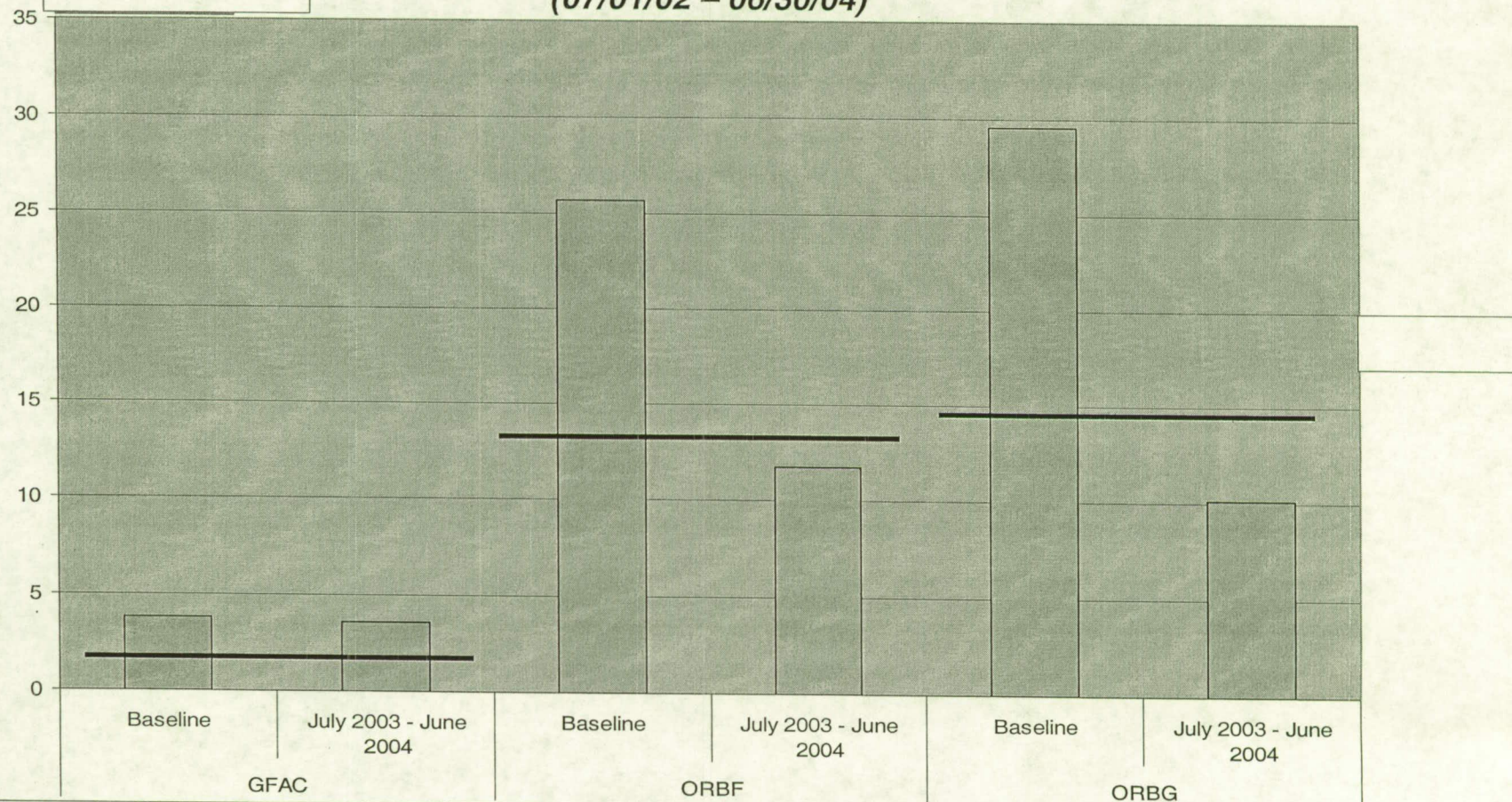


# Cycle Time Reduction – By Item Type

Requisition Approval Team

Cycle Time

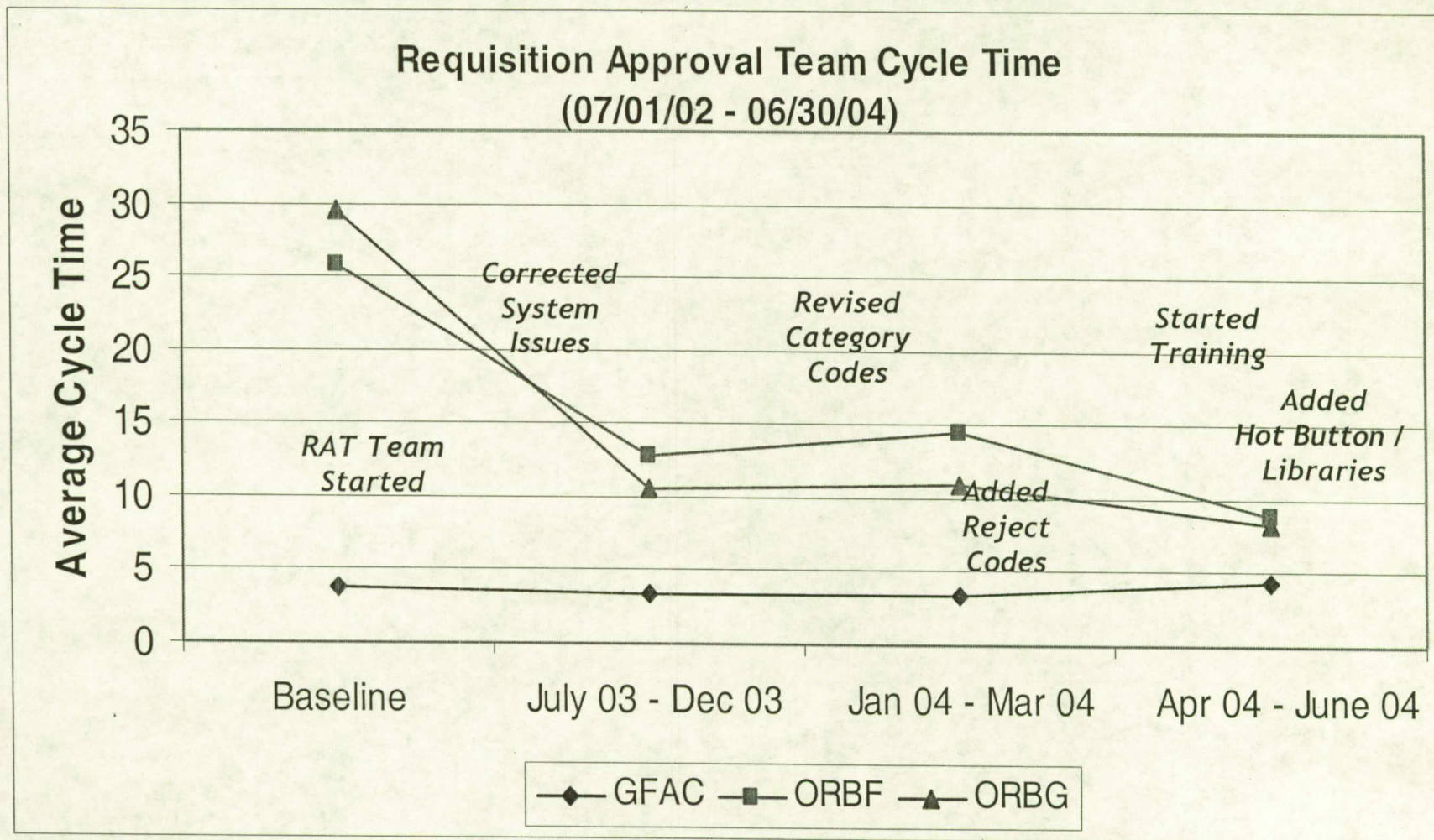
(07/01/02 – 06/30/04)



— = Goal of 50% Reduction in Cycle Time

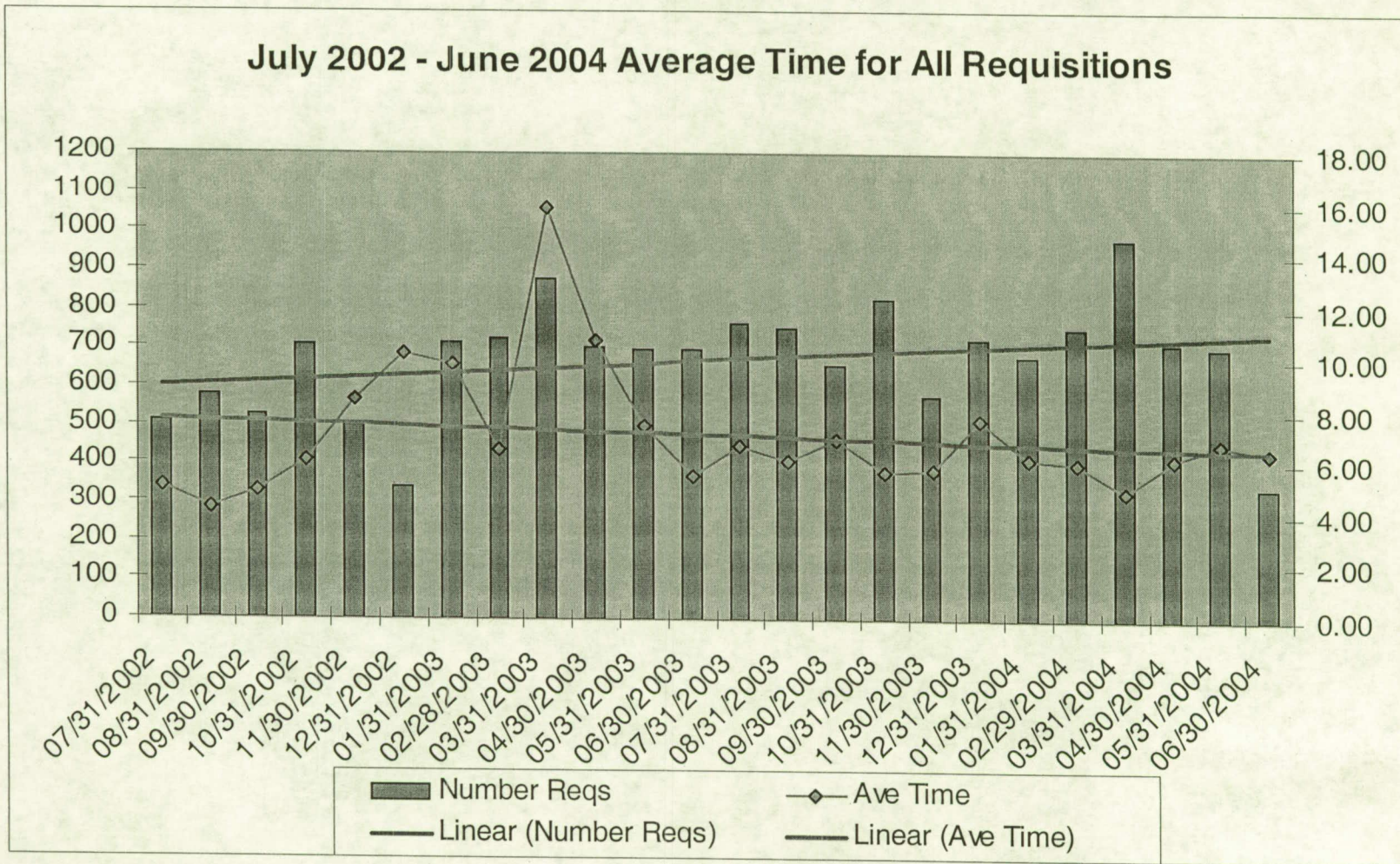


# Cycle Time Reduction – By Timeperiod



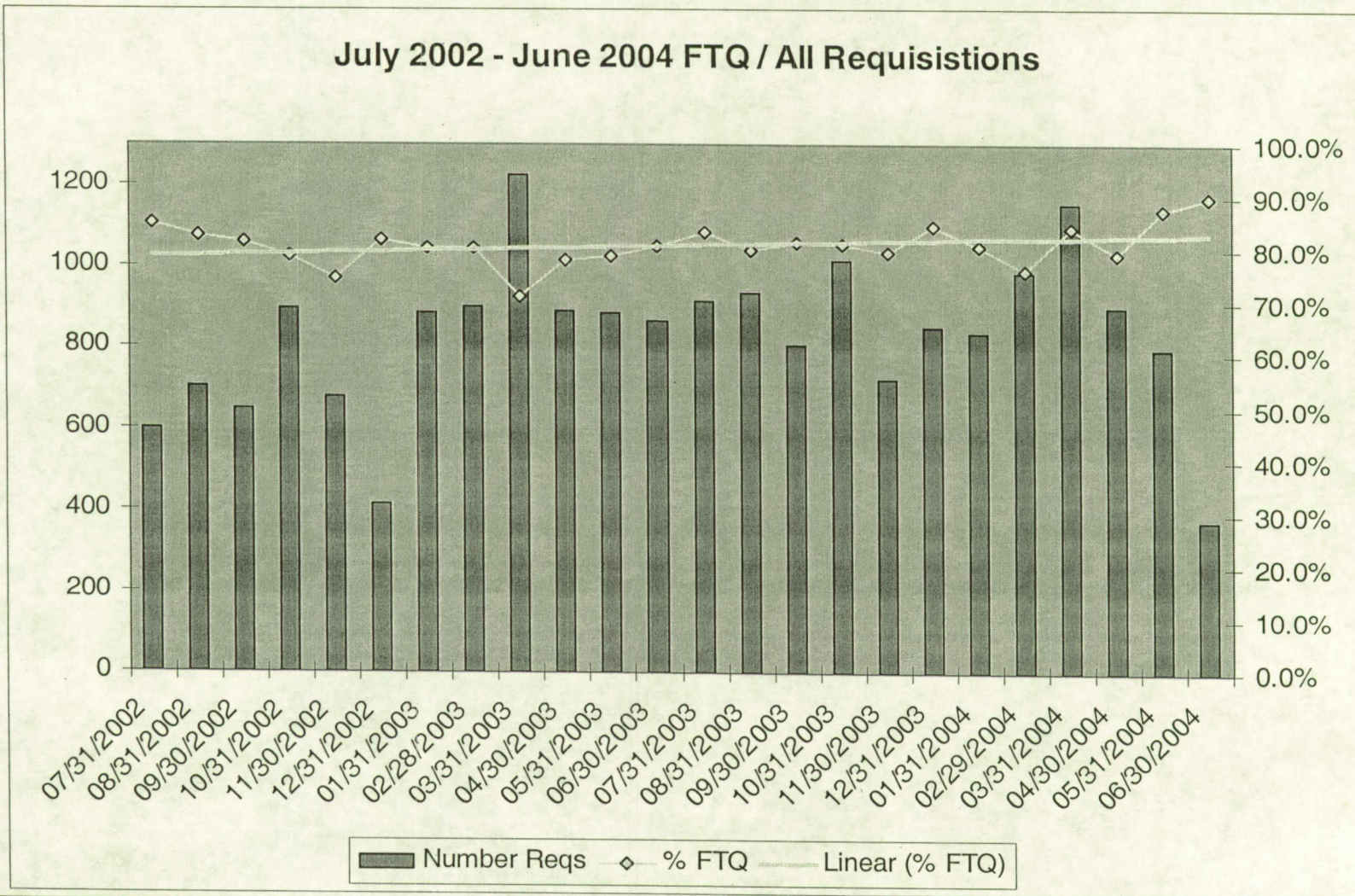


# RAT - FTQ Chart for All Requisitions





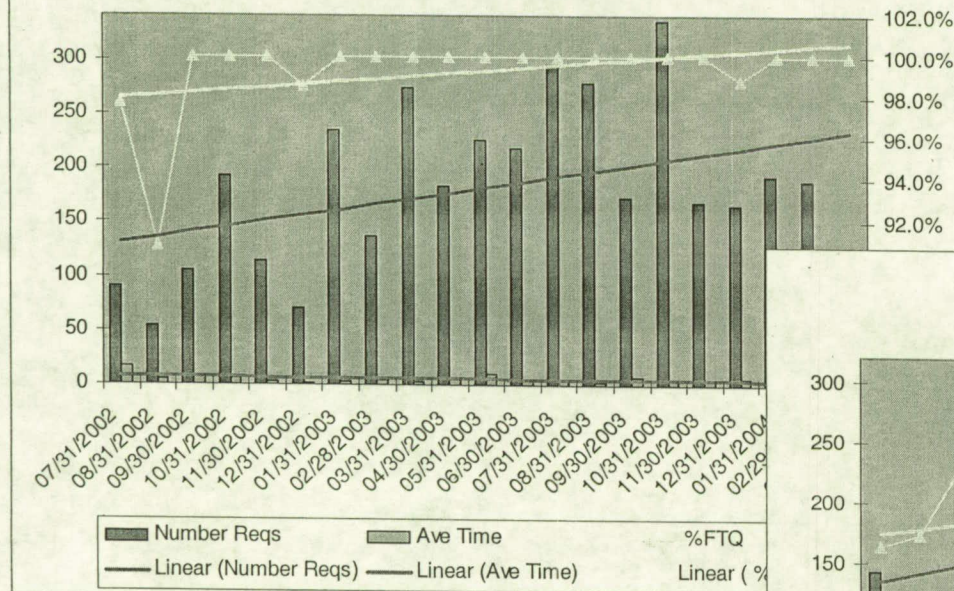
# RAT - FTQ Chart for All Requisitions





# FTQ Charts for July 2002 – June 2004

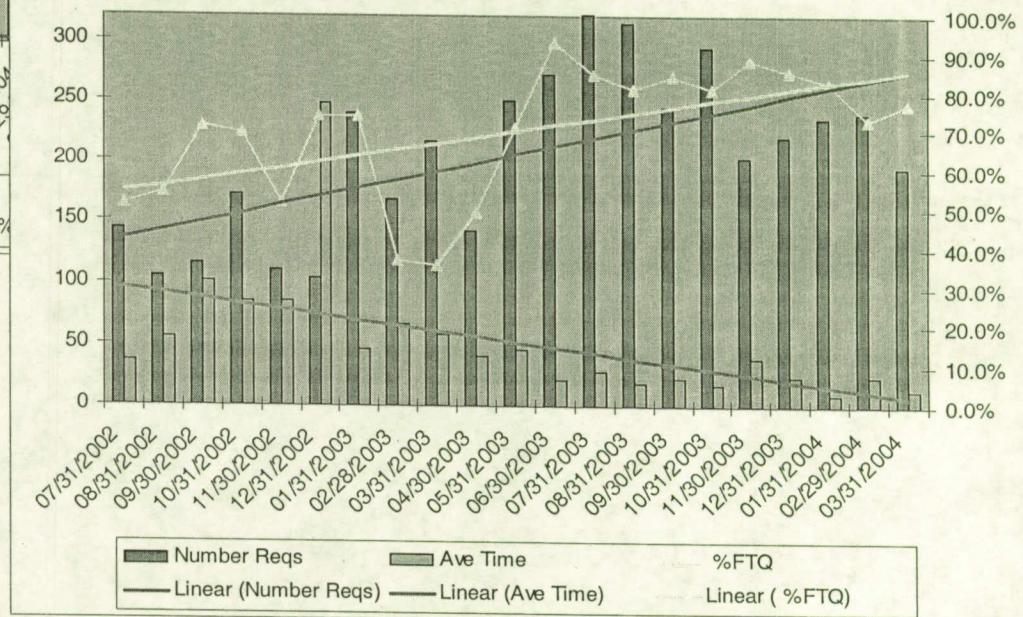
June 2002 - July 2004 DM



For  
Location:  
DM



June 2002 - July 2004 PQA



For  
Location:  
PQA



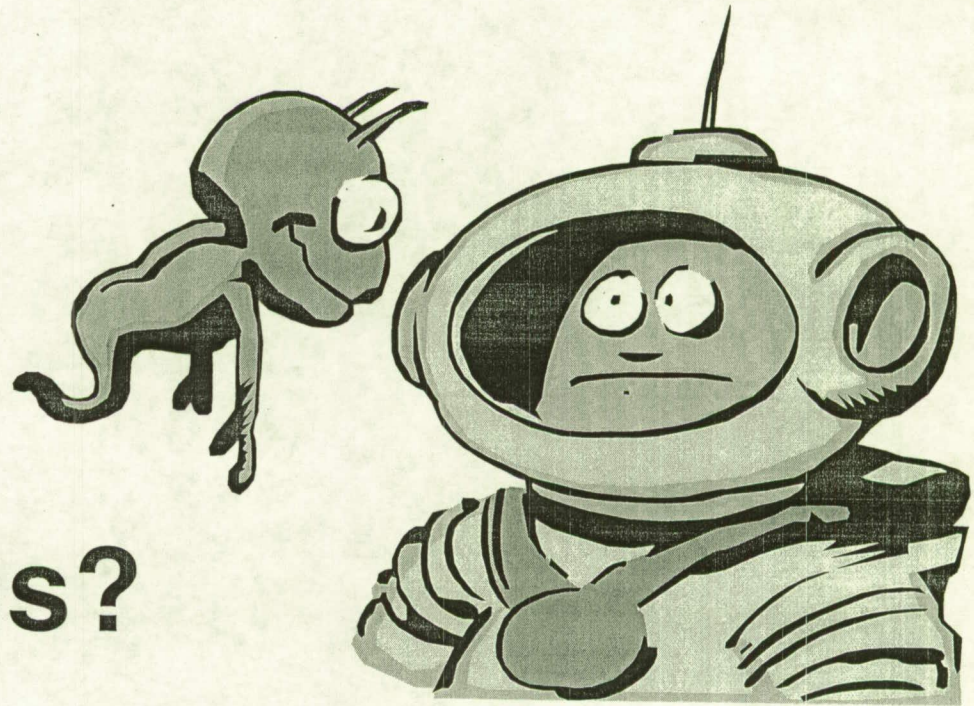


## Model Benefits - from Team Leader

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- Able to Run Multiple Scenarios
- Added Validity to Suggested Improvements
- Served as a Pilot
- Corroborated Results / Two Sets of Eyes on Data
- Confirmed Initial Findings
- Generated data not producible with Excel / Minitab





**Questions?**  
**Comments?**

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# Thank You



The model of the process will also be shown during the presentation.  
See example below:

08-02-2004

